

## How Engineers Celebrated the Centenary of Federation

Engineering Heritage Australia joined in the year-long Centenary of Federation festivities by plaquing ten engineering works. They were selected to show how engineering underpins Australia. In particular they illustrated:

- the need for Federation,
- the resource engineering that made Federation possible,
- how engineering works symbolised Federation,
- the projects made possible by Federation, and
- the engineering of the Federal Capital.

Two of the works showed the need for Federation. The East-West Telegraph built across the Nullarbor Plain in 1875 earned a National Engineering Landmark (NEL). It was significant for engineering construction in inhospitable terrain. It also illustrated the problems of financing a work of benefit to only one of the colonies involved, and of working with two different telegraphic transmission standards. Wallangarra Railway Interchange Station built in 1887 earned a Historic



Wallangarra railway station in its heyday

Engineering Marker (HEM). It started as a modest structure required by two different railway gauges and grew to be a logistic bottleneck during World War 2.

The resources engineering supporting federation gained NEL awards for two of the world's great mining regions, Broken Hill (1885) and Kalgoorlie (1893). The awards are for the mineral and mining engineering innovations developed as their extremely rich but difficult ore bodies were exploited. Large workforces in challenging environments developed the cities and they had a disdain for the illogical colonial borders that inhibited their growth and both supported Federation.

Politicians used new bridges to symbolise the joining of the colonies. Sir Henry Parkes used the mighty Hawkesbury Bridge commenced in 1886, the last and most expensive link in the 4140km between South Australia and Queensland, in his



The 1946 Hawkesbury River railway bridge, still in service with the 1889 bridge, right, now demolished

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## RTA & IEAust Plaque Convict Road & Timber Bridge as Part of Heritage Festival

As part of the National Trust Heritage Festival for 2002, "Bridging the Divide", the NSW Roads and Traffic Authority & The Institution of Engineers Australia jointly plaqued two heritage works on the western side of the Blue Mountains.

Victoria Pass, the western descent of the Great Western Highway off the Blue Mountains ridge line, was constructed in 1832 under the direction of Sir Thomas Mitchell, the then Surveyor General of NSW. The pass consists of a road carved out of the side of the escarpment by convict labour using simple hand tools in similar manner to the Great North Road to Newcastle. Victoria Pass however is still carrying traffic on a daily basis as if it were a recently constructed highway. Both cars and heavy semi-trailers haul up this steep road at a volume far beyond what Mitchell and his supervisors could ever have imagined when they constructed the road.

On the Sunday of the Heritage Festival (21 April 2002) the Pass was plaqued as a National Engineering Landmark. Representatives of the RTA, the Institution of Engineers, Blue Mountains City Council and local historical societies gathered for the ceremony on Mitchell's Ridge which overlooks Mount Blaxland, the furthest extent of the first crossing of the Blue Mountains in 1813.

The day continued after a short journey through the historic village of Hartley to McKanes Bridge



Victoria Pass, constructed in 1832, is still carrying traffic on a daily basis

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IEAust members and friends  
planting trees in Canberra  
Avenue in 1926

were awarded NEL plaques on both technical and social grounds.

Federation encouraged a focus on works of national importance and two important early works were awarded NEL status. One was the Trans Australia Railway commenced by the new Commonwealth Railways in 1912. Plaques at Port Augusta and Kalgoorlie celebrate the desert railway, which has the world's longest straight section. The other was the Murray River Works that started in 1913. This massive hydraulic engineering achievement was made possible through Federal/State cooperation and plaques were placed on Hume Dam, Yarrawonga Weir, and Blanchetown Lock.

The bitter rivalry between Sydney and Melbourne was avoided by the creation of Canberra. Monumental engineering was required to complement the bold street plan and significant buildings. As a highlight of The Centenary of Federation Engineering Heritage Conference a NEL plaque was unveiled to

speeches. The 1892 John Foord bridge over the Murray was the cover illustration for the 1895 Federal Convention at Corowa. That bridge is also an excellent example of the work of John McDonald, the famous Australian bridge engineer. Both bridges

celebrate the engineering required to create Scrivener Dam, Lake Burley Griffin, and its beautiful bridges.

The tenth Centenary of Federation plaque was a HEM unveiled to mark our Institution's input to Canberra. On a cold August day in 1926 members and friends planted trees in a windswept sheep paddock to celebrate the Divisions and prominent engineers. Those trees and a few replacements now line Canberra Avenue. This early planting showed the Institution's commitment to the future national capital and to the environment.

— Robin Black



Yarrawonga weir on the Murray  
River



Lake Burley Griffin with  
Scrivener Dam in the  
foreground

This review by Robin Black of the Centenary of Federation Plaques Program is necessarily brief. Further detail can be found in the plaques submissions held by relevant Divisions or in a paper by Robin entitled "The Centenary of Federation Plaques Program of EHA" [11<sup>th</sup> National Conference on Engineering Heritage, Canberra, October 2001, pp105-109].

## 12<sup>th</sup> National Engineering Heritage Conference

*Engineering Heritage Matters!*

The Queensland Committee of EHA has changed the venue for the 2003 Engineering Heritage Conference from Ipswich to Toowoomba but your diary dates remain the same! Your diary entry should read:

**2003 Conference** Sunday 28/9 to Wednesday 1/10/2003.

University of Southern Queensland, Toowoomba, Queensland. [It's the week after the famous *Carnival of Flowers* and there is a choice of on-campus student accommodation or 3\* and 4\* motel accommodation].

**2003 Pre-conference Tour** Thursday 25/9 to Saturday 27/9/2003 is a loop from Toowoomba> Brisbane> Maryborough> Gympie> Ipswich and back to Toowoomba. [Highlights are tilt train ride, heritage railway workshops, foundries, dams, hydro, unique museums and much much more].

The formal *Call for Papers* is a month away but you can get in early.

<b>Deadlines</b>	Receipt of Synopsis:	31 December 2002
	Advice of provisional acceptance:	31 January 2003
	Receipt of Papers for refereeing:	30 April 2003
	Confirmation of acceptance:	30 June 2003

**To be sure of being on the mailing list you can:**

- **Drop a note to the Heritage Conference Secretary** Shelley Stewart-Christie, Meetings and Events, University of Southern Queensland, PO Box 282, Darling Heights Qld. 4350.
- **Or phone** 07 4631 2190
- **Or fax** 07 4635 5550
- **Or e-mail** [stewartc@usq.edu.au](mailto:stewartc@usq.edu.au).

### Toowoomba

Queensland's Garden City (population 100,000) is perched on the edge of the Great Dividing Range 700m above sea level. Visitors flock there every September for the Carnival of Flowers,

its parks, gardens, and scenic views. The Darling Downs were discovered in 1827, settled in 1840, and the huge Jondaryan Woolshed is a reminder of its pastoral past, whilst Toowoomba's Cobb & Co. Museum captures both local history and Queensland's early transportation. Other tourist drawcards include the forests of the Bunya Mountains, the wineries of the South Burnett, national parks and even dams offering freshwater fishing. Toowoomba is the home of the legendary Southern Cross windmill. For more information on Toowoomba visit [www.toowoomba.qld.gov.au](http://www.toowoomba.qld.gov.au)

### Who should participate?

Engineers	Conservators
Archaeologists	Curators
Architects	Historians
Archivists	Public Interest Groups

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One of the remaining McDonald timber truss bridges, McKanes Bridge

where one of the remaining six McDonald Timber Truss Bridges stands today. Here a Historic Engineering Marker was unveiled to commemorate the work of John McDonald, the then Engineer for Bridges and designer of the timber truss bridge now named after him. The design was a technical advance in timber bridge engineering in the 1880s.

The RTA has recently fully restored the bridge as one of its representatives of this type of bridge, of which there were originally 91 in NSW. Today the bridge, nestled in the quiet valley adjacent to McKanes Falls, carries only local traffic to Lithgow; hopefully it will stand for many years to display the methods of timber bridge building at the turn of the 20<sup>th</sup> century.

With the assistance of the National Trust at Woodford, this day of plaquing was also the occasion to release the RTA's new touring brochure "Crossing the Blue Mountains", which highlights the sites and places of heritage significance across the Blue Mountains, including both McKanes Bridge and Victoria Pass. The pamphlet is now one of a set displaying the roads leading out of Sydney and it can be obtained at local motor registry offices and tourist centres.

— Glenn Rigden

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## The Greyhound of the Pacific

*S.S. Rotomahana* was built by W. Denny and Bros. at Dumbarton, Scotland, where she was launched on 5 June 1879 for the Union Steam Ship Co. of New Zealand, intended for passenger service between Australia and New Zealand.

Rotomahana invited interest from when her keel was laid. She was the first mild steel, ocean-going, steam ship and the first to have twin bilge keels. She was the centre of interest at ports of call because of her yacht-like lines and her sumptuous internal fittings. Rotomahana, of 1727 tons gross, was 285 feet long and 35 feet beam, with her hold 25 feet deep. She had watertight bulkheads and aft she had a double bottom, which allowed her to take in 180 tons of water ballast. She was schooner rigged, with square rig on the foremast, and was powered by compound engines to drive her 14ft 6in diameter propeller, enabling her to exceed her design speed of fifteen knots.

The engines of the Rotomahana were built by Messrs. Denny and Co., of Dumbarton. They are compound, direct-acting and surface-condensing with inverted cylinders which are of 47 in. and 82 in. diameter, respectively, with 48 in. stroke. The engines are of 450 nominal horsepower or 3500 indicated.

She had six boilers and 18 furnaces, the total heating surface, when all boilers were operating, being 8344 square feet. Weir's patent feed heaters send water into the boilers at 212°F.

On the run out, from Southampton to Melbourne, with only four boilers going and with a consumption of 25 tons of coal a day, she made 65 revolutions per minute. When going at full speed and with all fires going, she used 45 tons per day.

During her trials, she was described in Glasgow as "the finest specimen of the shipbuilders' and engineers' skill ever turned out by the builders". The mean speed for her trials was 15.158 knots and, during her trip to London, in heavy, adverse weather, she made a faster run than had been achieved before.

The Mercury (Hobart) of 30 September 1879 reported on the delivery run from Plymouth to Melbourne. On the first leg to St Vincent, under easy steam, she averaged 321 (nautical) miles per

day and, to Cape Town using only four boilers, she average 266 miles. "From the Cape she made a beautiful track across the Southern Ocean, the distance, 5860 miles, was accomplished in 19 days four and a half hours, giving an average of 305.2 knots (sic) and this with only four boilers and at three-quarter speed." From Port Phillip Heads to Hobson's Bay was done in two hours.

From Melbourne, Rotomahana sailed to Wellington to prepare for her planned run for passenger trade between New Zealand and Australia. The first such voyage, to Sydney, began on 9 October 1879, but she was soon switched to the New Zealand–Hobart–Melbourne run. On 9 December 1879, Rotomahana made her first run into Hobart, which was widely recognized as a very fast voyage, being 64 hours from Bluff, in New Zealand, to

Hobart. Because of her speed she became known as "The Greyhound of the Pacific" and for many years she carried a golden greyhound at her foremast head.

On 1 June 1891, Rotomahana came on to the Bass Strait run between Launceston and Melbourne and soon recorded a passage of 12 hours 40 minutes from Heads to Heads. In May 1892 she returned to the Bluff run, where she remained



*S.S. Rotomahana, 1879-1920, pioneer of the Bass Strait run*

until returned to Bass Strait in 1908 when she shared the winter run with Loongana. Because of her limited cargo capacity and her high rate of coal consumption, more competitive ships replaced Rotomahana, but she continued as the stand-by vessel on the Bass Strait run until a maritime strike in 1920 resulted in her being pensioned off.

Rotomahana was sold at auction to Power and Davis, Melbourne shipbreakers and, after being stripped of all salvageable materials and equipment, she was towed through Port Phillip Heads and scuttled three miles out to sea where she remains in about 22 fathoms (40 metres) as a site for divers.

To quote from "Diving in The World" web page — "With a character all of her own and such an eventful past, to miss a dive on 'The Rotten Banana' is sheer lunacy".

— Allen Wilson



## Letter to the Editor

(This letter refers to the article in Issue No. 12 of the newsletter)

Jack Symons story on copper smelting at Mt Lyell is only half the story.

The words at the end "Both companies would have saved enormously by smelting their ores in the same furnace", "North Lyell Company - refused Mount Lyell's offer of a merger." "Their blunt refusal probably cost them about £750,000" have been taken from Blainey G (1963) *The Rush that never ended*. While Blainey states that the North Lyell smelters failed nowhere does he state that the Mt Lyell smelters failed. In fact the Mt Lyell smelters were made to work by a great engineer Robert Carl Sticht.

Engineers solve problems but great engineers when confronted with very difficult problems solve them by innovations.

Sticht from the start was a believer in the possibility of pyritic smelting (ie smelting without fuel). "He persuaded the directors to abandon their costly plan to roast sulphur from the ore before smelting it". The huge 150-ton blast furnaces were lit on 25 June 1896. "Sticht's smelters were a milestone in copper metallurgy" "A wild share boom began in 1897. The Mount Lyell Mining and Railway company paid its first dividend in July(1897)" "On 13 November 1902 Sticht gave his company new hope by fulfilling the ancient dream of metallurgists. He smelted ore without coke or coal." "North Lyell now copied Sticht's pyritic smelting" but failed. The two companies merged and Sticht was made General Manager of the combined company.

Robert Carl Sticht is mentioned in the book *Technology in Australia 1788-1988* in a chapter on Mt Lyell Technology "The developments in blast furnace and converter design and operation under the inspired leadership of Robert Carl Sticht were truly remarkable"

The Bright Sparcs Biographical entry states "Achieved the first successful purely pyritic smelting in the world in 1902. Commemorated by the mineral stichtite"

Further, Sticht was still General Manager when smelting was abandoned at Mt Lyell in 1921 in favour of recovering the minerals by flotation. Flotation was a world first development at Broken Hill for zinc in 1902 by G Delprat. Selective flotation (for lead and zinc) was developed in 1912 by Leslie Bradford. Flotation then spread to other metal mines quickly. The first flotation plant was erected in Queenstown at the Comstock copper mine in 1916.

Robert Carl Sticht and Mt Lyell played an important part in making Australia the richest country in the world on a per capita basis at the beginning of the twentieth century.

— Peter Benkendorf  
(MIEAust, FAusIMM)

## Engineering Heritage in the Northern Territory

We have been fortunate enough over the last twelve months to have a number of interesting heritage projects brought to the Division's attention.

### George Redmond's Manuscript

We were delighted to be able to play a small part in getting George Redmond's manuscript, "A History of Public Works in the Northern Territory from 1824", typed onto computer as a draft document. Until now only one hard copy existed - as typed and hand written notes. Local historians, Peter and Sheila Forrest, have contributed many hours of unpaid time, working with George to put the manuscript together. The Department of Transport and Works (as it was then) generously provided money for the typing of the document (some four hundred pages). So the draft manuscript is now safely on computer and copies are available on CD.

At the reception hosted by the Northern Territory Administrator, His Honour John Anictonatis, to launch Engineering Week 2001, we took the opportunity to present, to members and the public, the "History of Public Works" manuscript in draft form and also George's book about Darwin before and after Cyclone Tracy - "In the Eye of the Storm". About 80 people, including many long term Territorians, attended the function and appreciated the opportunity to catch up with George and his wife Adelaide, who travelled to Darwin especially to attend the reception, which was held at Government House on 4 September 2001. Sadly, George's wife Adelaide has since passed away.

There is a good deal of interest in having the draft document taken further - to include one or two more chapters which George has written and a large number of photographs which would need to be scanned and then the editing of the document. Whether we are able to progress this any further will depend on funds being provided by interested parties. George would certainly love to see his work taken to the stage of a publishable document.

### Adelaide River Railway Bridge

This has been on the "wish list" of heritage projects for some years and the coming of the new railway has prompted renewed interest in this fine example of bridge building.

From the point of view of the Institution of Engineers we are submitting a proposal to the National Committee for a Historic Engineering Marker to be erected at the bridge. There is also a need for some work to be done to arrest corrosion. The Heritage Group is keen to hear from members or interested parties about options for preservation of the bridge.

The Dept of Infrastructure Planning and Environment Heritage web site ([www.lpe.nt.gov.au/heritage](http://www.lpe.nt.gov.au/heritage)) gives some background into the history of the bridge and the Adelaide River Siding.

### Stokes Hill Steam Driven Oil Pump House

The third project that has caught the attention of the Heritage Group is the old Steam Driven Oil Pump Station at Stokes Hill. Set behind a fence and concrete wall, just to the left of the Pearl Exhibition, the station has all but been forgotten. It is however in remarkably good condition and certainly worthy of recognition as an important piece of engineering history.

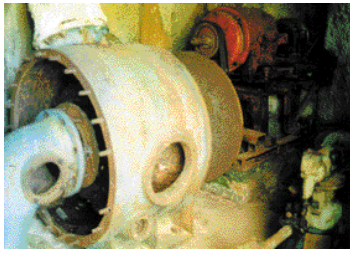
The Steam Driven Oil Pump House and its pumping equipment are relics of the change from coal to fuel oil for naval ships in the early years of the twentieth century. The Darwin Navy Oil Fuel Installation (OFI) dates from a 1923 decision to close the coaling station at Thursday Island and replace it with an oil fuel installation in Darwin Harbour. The Pump House was built in 1927/28 and operated in conjunction with a number of 8000 ton storage tanks



Adelaide River railway bridge, 1888

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## Early Hydro Plants in North Queensland



Recent photo in Paronella Park hydro plant room



Mena Creek Falls with intake structure in 1938

Innovative engineering doesn't have to be on a grand scale, or even be the responsibility of chartered engineers.

The first hydro-electric plant in North Queensland was installed by a Spanish migrant to provide power for his project at Paronella Park, near Innisfail, which was the culmination of his life's work.

Jose Paronella had arrived from Spain in 1911 and worked initially in the sugar industry. He returned to Spain in 1924 and married Margarita, and soon after his return purchased 13 acres of virgin rainforest on Mena Creek, below a picturesque waterfall.

His ambition for his property, Paronella Park, was to make it the centre for social and festive gatherings for the region.

The centre-piece was the "castle", an ornate concrete building, with, it is said, old steel rails as reinforcing. The castle included a theatre and ballroom used for dances and parties. A "grand staircase" from lower levels up to the castle provided the means of transporting river sand from the creek, to be used as concrete aggregate. The project also included tea-gardens, a restaurant, walking paths through the rainforest, and a swimming pool in the creek.

Power for the castle and the remainder of the Park was provided by a hydro-electric generating plant commissioned in 1933, using the head available from the waterfall.

The manufacturer was Boving of London and the output from the Francis horizontal turbine plant was 27.5kw.

The writer visited the Park with a school group from Brisbane in 1938, when it was in its hey-day, located adjacent to the main highway south of Innisfail. The writer was impressed by the myriad reflector, a great ball with 1270 small mirrors, that was the main feature of the hall. With coloured spotlights focused on the rotating ball from the corners of the hall, the effect was quite spectacular — an early version of the lighting at a modern rock concert.

A photograph, taken at the time on a Box Brownie camera, shows Mena Creek Falls, the intake and the flume leading to the turbine, all the construction being of concrete.

The Park suffered damage from flood debris in 1946. Repairs proceeded but Jose Paronella died in 1948. The family carried on until 1977 when the Park was sold.

The present owners, Mark and Judy Evans, purchased the land in 1993 and are proceeding with a plan to put Paronella Park back on the map. The Park was listed by the National Trust in 1997 and has won Tourism Awards in recent years.

The hydro plant was inspected by retired electrical engineer Harold Waring in 1998 with a view to possible restoration. He reports that while the plant in general remained in good condition, some major pipework is missing and significant expense would be involved in re-commissioning. The owners may not consider this warranted.

John Fordham, a member of EHA - Queensland Group, visited the installation in 1998, and took the photo inside the small plant room. He draws attention to the governor (bottom right), belt-driven from the turbine shaft.

The writer, while working in Far North Queensland in later years, came in contact with two other interesting old hydro projects. An inventive farmer, Otto Jonsson, at Kaban, near Ravenshoe, built a small concrete weir across Mill Creek on his property, with a turbine set mounted below the wall. The penstock which released water to the turbine was operated by remote control from the farmer's residence some hundreds of metres distant. A lever at the house operated the penstock gate via a wire rope slung through pulleys fixed to trees — pull the lever and the power came on!

A disused hydro plant on Rex Creek in the mountains near Mossman proved to be of significant value when a major district water supply for Mossman, Port Douglas and surrounding areas was being planned in the 1960's. The old intake structure and pipeline to the former turbine location provided some 70 metres of additional head for the water supply intake at virtually no cost.

— Norman Traves

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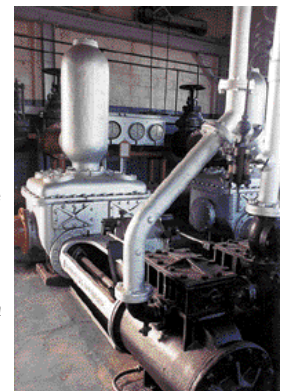
which were built progressively from 1926 to 1941. The Pump House survived Japanese bombing in 1942 and 1943 however some of the tanks were destroyed and others damaged. The Pump House remained in service, first as the principal pumping machinery and later as a backup to electric pumps until 1989 when it was retired from the Royal Australian Navy service. Ownership was handed to the Northern Territory Government and the site was secured for future restoration.

The future of the site has recently been discussed by an informal group on the initiative of the Heritage Group.

In the last decade little has changed. The site has generally been inaccessible to the public except to the extent that it can be viewed from the outside as it is located in a public car park of the Wharf Precinct.

— Janice Lake, IEAust Director, Northern Division

Right: Stokes Hill oil pump, 1927/28



## Book Review: A new biography of C. Y. O'Connor

**C. Y. O'Connor: his life and legacy.** By A.G.Evans, University of Western Australia Press, November 2001, 287 pages, \$54.95.

Some of O'Connor's contemporaries described him as a man ahead of his time, an engineer of genius. But as Evans writes in this new biography, he was fundamentally a man of his age. In 1891 John Forrest, Western Australia's first Premier, offered O'Connor the position of Engineer-in-Chief, W. A., with a scope of work famously defined as 'Railways, Harbours, everything'. Forrest and O'Connor were a stunning combination, and Forrest's Minister for Public Works, the competent Harry Venn, provided support. On the location and design of a harbour, these politicians were prepared to back O'Connor's judgement against the advice of Britain's foremost expert, Coode, and the successful Fremantle harbour project was the result. O'Connor's meticulous work supported Forrest's huge gamble on the Coolgardie water supply project.

O'Connor went to London in 1897 to argue the merits of the water supply proposal before a team of experts to underpin the bid for loans of £2.5 million for the project. While there he was invested with the honour of Companion of the Order of St Michael and St George in recognition of his work on Fremantle harbour, then nearing completion.

The second attempt to raise the loans for the water supply project on the London market was successful. Work commenced almost

immediately and once again O'Connor's engineering judgement was on the line with the adoption of a novel construction for the pipes that avoided the use of rivets, developed in Australia by Mephan Ferguson, and the use of a locally invented machine for sealing the pipe joints.

At the time of O'Connor's tragic suicide in 1902, the water project was only a year from completion, and proceeding according to plan. But it was not a happy time for O'Connor, with disputes over contract work on the pipeline, a dithering Premier, Leake, a weak Minister, Rason, and parts of the press spreading scurrilous rumours.

Evans' book gives generous recognition to the life, work and legacy of Australia's most distinguished engineer of the colonial period. Those who have read the scholarly biography of O'Connor by Tauman won't find much that is new and important in Evans' one, either in information or interpretation. But it's a little more readable and focused than Tauman's, and was nicely timed to precede the centenary on 9 March this year of its hero's death. Some will be pleased to find a chapter mainly devoted to a rather dramatised put-down of Blainey's attack in his book *The Golden Mile* on O'Connor's integrity and professional judgement. Engineers will spot a couple of fairly glaring mistakes in the endnotes, but overall they will be happy with the book. IEAust W.A. Division assisted with its funding.

— Ian Arthur

### Time to Blow Our Trumpet! Continued from page 8

(Interviewing senior engineers can be very rewarding as evident in this report from the Newcastle Division Oral History convenor, Judy Lindsay, reproduced from the Division Newsletter.)

The Oral History Group, part of the Division's Heritage Branch, has been conducting interviews with eminent engineers. There have been some fascinating recollections of work practices and thoughts on careers spanning many years.

It was a privilege to have the opportunity to interview Frank Michell, co-founder of Crooks, Michell, Peacock & Stewart (CMPS, now Egis). On the advice of an uncle, Frank left school at 15, in the 1920's, to join Dorman Long. He studied civil engineering in the evenings while completing a 5 year draftsman's apprenticeship and, after a period with another consulting practice, at the age of 23 he established his first consulting practice. This was disrupted by World War 2. After the war he amalgamated with Robert Crooks but only 18 months later Frank bought out Robert's share and became the sole owner for the next 5 years. With the increase in work, Frank brought in Ted Peacock as a partner so the name was changed to Crooks Michell Peacock and went on ultimately to become one of the largest consulting engineering firms in Australia.

He described his achievements, including leading the introduction of welding connections into building design and other design innovations using skills as specialised as these, as a springboard for the growth of his company. It was obvious from the interview that the success of CMPS would have begun with the leadership skills, innovative creativity and genuine charm of this outstanding Australian.

Another fascinating interviewee was Zihni Buzo. Born in Albania he obtained his elementary education there, before winning a scholarship to study in Istanbul, and then later studied in USA. All these studies necessitated learning new languages. He returned to Albania and worked for the Rockefeller Foundation on a malaria control project.

He immigrated to Australia at the outbreak of World War 2. Following the war he gained employment at the University of Sydney lecturing Civil Engineering. He later moved to Armidale and established his own consulting practice and designed and supervised the construction of Oakey Creek Hydro Electric Scheme in the 1950's. In 1959, he was employed by the World Health Organisation to travel to various projects throughout the world, where he planned and taught local people how to construct and manage various water and irrigation treatment plants. He performed this work in over 40 countries over a period of 15 years. The achievements of his working life have been outstanding in their diversity and social significance.

These are just two of the interviews that have been carried out by our group. Do you know someone that you would like to interview and gain personal insights in how the engineering profession has developed and changed over the last fifty years? The oral history committee would love to hear from you and will help you in interview 'know how'. Please do not let these testimonies be lost. There is so much to gain from our predecessors and the process is most enjoyable and worthwhile.

— Judy Lindsay



## Sydney Division Heritage Excellence Awards



*The conserved Belmore Basin Lighthouse, Wollongong, 1871*

The Colin Crisp Heritage Excellence Award went last November to the restoration of the Belmore Basin Lighthouse of Wollongong Harbour. The entry was submitted by the NSW Department of Land and Water Conservation in the annual excellence awards of Sydney Division of The Institution of Engineers, Australia. A most impressive feature of the entry was the strong community participation in the project, taken up by the Department, to retain an important historical landmark in the area. The 1871 structure is of rivetted, wrought-iron plate construction with hoops. The name associated with it is that of E.O.Moriarty from the large family of engineers who served with the state's Department of Public Works in that era. (In Register of National Estate 001537)

Meinhardt's entry of the preservation of historic St Patrick's school hall (RNE 015787) received one of the highly commended recommendations. In an area of concentrated cultural significance such as The Rocks in Sydney, it is necessary to go vertically in search of space rather than horizontally. This led to contractors Grocon poising the hall over nine storeys of space in order to provide the required parking area for The Cove Apartments project.

Another highly commended award was made to consultants Robert Bird and Partners and constructors Multiplex for the 1911 Woolloomooloo Finger Wharf entry. The restoration of the wharf has been able to combine an apartment, hotel and restaurant complex with an interior that gives the visitor a startling impression that the premises are about to recommence the processing of immigrants or the export of wool using the machinery that has remained. (RNE 016335)

Special mention was made of a report on pre-1930 metal bridges by consulting engineers Cardno MBK for the Roads and Traffic Authority of New South Wales. This is one of a series of reports on various types of older bridges in the RTA's charge, leading to decisions on and programmes for the future of these structures.

— Ian Bowie

## Sale Swing Bridge



*The 1883 wrought iron Sale Swing Bridge*

Designed by Percy Grainger's father John Grainger, and opened for traffic in 1883, the Swing Bridge, located about six kilometres south of Sale, is being refurbished by VicRoads. Built to allow steam ship access to the canal cut to link the river system to the town of Sale, the bridge carried the Port Albert Road, now the South Gippsland Highway, over the La Trobe River.

The swing span, 148 foot long, is formed by two wrought iron trusses, curved in the top chord, placed at 23 foot centres, with the deck supported from the lower chords. It is a balanced span that swings around its centre, with a central pier and eight surrounding piers that carry the roller path. The piers are formed from cast iron cylinders filled with concrete founded on a bed of conglomerate. The end spans, of 19 feet, are parallel chord trusses supported on braced cylindrical piers in the river and on brick retaining wall abutments at their land ends.

The castings and fittings were manufactured by Johnson and

## Tarana Railway Station Refurbishment



*The conserved Tarana Railway Station*

The NSW Rail Infrastructure Corporation (RIC) has made an excellent start to refurbishing one of New South Wales' old country railway stations. This is just part of their ongoing preservation program.

Tarana, a NSW heritage listed site, is located on the western line between Lithgow and Bathurst. The station, which is no longer open, was the junction for the branch line to Oberon, which was one of the pioneer lines established to reach out into rural NSW. The current site is an excellent representation of a branch line junction station with all the ancillary items that went with such a site. Here many of the items are still intact and can be restored with some minor resources. The line to Oberon is also fairly intact since its closure in the late 1970s and the station at Oberon still stands as the local historical museum.

The railway precinct consists of wooden station buildings, signal box, water tank, water tower, overhead bridge, dock platform, and sidings. The main line now consists of a single line only compared to double line that once ran through this busy area. The NSW Heritage Office has been working with RIC on listing many of their heritage sites and Tarana has been included as part of this work.

The RIC has commenced conservation work by repainting the station buildings in the old colours. More work will be required over the next year or so to get the Tarana precinct back to what it once was, thus conserving a bit of the rail era out in the NSW western districts.

Tarana, a small country village can be reached via Bathurst, Oberon or Lithgow and is about 30 minutes drive from any of the above towns.

— Glenn Rigden

Company at the Tyne Factory in Melbourne, and the bridge was built by Peter Platt for the Board of Land and Works. Interestingly, its test loading prior to opening was 240 head of cattle.

Manually operated, it was regularly opened for river traffic until the late 1920's. When constructed, the water on each side of its central support was navigable, and on opening two steamers could pass through at the one time. For many years there was a significant volume of river traffic with services from Sale to Melbourne and on the completion of the railway to Sale, from Sale to Bairnsdale.

With some deck strengthening, and operating as a single lane bridge, it has continued to serve the community until its recent replacement. As part of the replacement project, VicRoads is returning the swing mechanism to full working order and restoring the whole structure to how it looked when opened in 1883. The work is being carried out in accordance with VicRoads policy of preserving examples of the history of bridge-building in Victoria.

— Brian Harper

## Time to Blow Our Trumpet!

Over many years The Institution's Divisional heritage groups have recorded about 200 oral history interviews. Some have been with giants of engineering – people that will be included in The Institution's *Engineering Heroes Directory*. However, the limited funds available have restricted participation by the smaller groups and have prevented the interview of engineers remote from capital cities.

Now, through the National Engineering Oral History Program commenced this year, we have the opportunity to record for posterity the experiences of nationally important engineers, many of whom have been important players in the building of modern Australia. We will be able to hear the stories of how and why things happened in the voices of the engineers who were involved.

During their working life engineers accumulate a wealth of knowledge, experience and accomplishment; many have been involved in aspects of great technological and social change. In fact quite a few have made engineering history. By providing an ever-expanding database of engineering and social history, the tapes will be a valuable resource for researchers, historians, biographers and anyone interested in the history of engineering.

The Program aims to cover as many facets of engineering as possible and nominations are welcomed. They should be emailed to the Administrator, *Engineering Heritage Australia* at [bhonig@ieaust.org.au](mailto:bhonig@ieaust.org.au).

To enable priorities to be established (as it may not be possible to interview all nominees), nominations should include:

- name, date of birth, address and other contact details of the nominee;
- a brief statement of the prospect's career, highlighting their significance and achievements;
- mention of honours and awards received together with other relevant information such as inclusion in Who's Who in Australia ;
- a statement describing why the nominee might be considered nationally important and why their experiences and achievements will be of historical significance; and
- an indication of any urgency or impediment that might attach to the timing or holding of an interview.

Enquiries about the Program can be made to Michael Clarke, Chair of Engineering Heritage Australia, by phone: (02) 9487 6414 or email: [maclarke@ozemail.com.au](mailto:maclarke@ozemail.com.au)

Michael Clarke

*Continued on page 6*

## Engineering Heritage Walk in Hobart

Engineering Heritage Tasmania has produced a self-guided walking tour pamphlet of the Hobart waterfront.

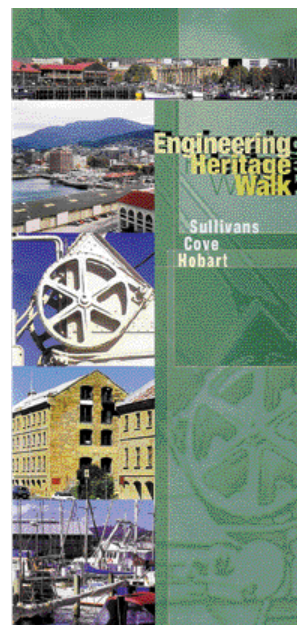
The pamphlet has a map of Sullivans Cove showing the walking route and the locations of 14 works of engineering heritage interest. Each item is photographed and the accompanying text describes its significance. Works include the 1846-47 Royal Engineers Building, an 1899 steam crane, a swing bridge and a bascule bridge, a gun battery and a powder magazine

The text and many of the photographs were provided by members of Engineering Heritage Tasmania, mainly Harry Gilbert in recent years.

The Hobart City Council offered in 1999 to produce it in full colour. Harry Gilbert kept prodding the officer involved. In time they engaged a graphic artist who designed the present layout and took some of the photographs again. Printing took place in April 2002.

The pamphlet is free and copies are available from the Hobart City Council, the Institution of Engineers in Royal Engineers Building and several tourist outlets around Sullivans Cove.

— Bruce Cole



## Engineering Heritage Australia Committee

A number of changes occurred in the EHA committee in 2002. We welcomed Brian Harper from Victoria Division, Peter Cockbain from Newcastle Division (Peter is also IEAust National Vice President Marketing and Communications) and welcomed back Tony Moulds from W.A. Benita Honig from National Office took over as committee administrator. It was pleasing to welcome Owen Peake to the May meeting as a representative of the Northern Division, the first time that Division has been physically represented.

We thank retired members Bruce James, Peter Gesling and Bruce Sandie for their efforts while committee members.

In 2002 the committee of Engineering Heritage Australia is made up of the following members:

Michael Clarke, Sydney - Chairman  
Bruce Cole, Tasmania - Deputy Chairman  
Harry Trueman, Sydney - Immediate Past Chairman  
Glenn Rigden, Sydney  
Peter Cockbain, Newcastle  
Tony Moulds, Western Australia  
John Jenkins/Owen Peake, Northern  
Bill Jordan, Newcastle - supernumerary  
Nigel Ridgway, South Australia  
Brian Harper, Victoria  
Keith Baker, Canberra  
Robin Black, Queensland.

After many years of association with the committee, Rob Breen the former committee administrator, who had been helping as a plaquing subcommittee member, has "retired". Canberra Division is sure to continue to benefit from his great knowledge.

This newsletter is published by Engineering Heritage Australia, a Special Interest Group of the Institution of Engineers, Australia. Please contact us on (02) 6270 6530, fax (02) 6273 2358 or visit our website at [www.ieaust.org.au](http://www.ieaust.org.au)  
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